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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,833	04/06/2001	Yushi Inoue	900-379	5089

7590 04/11/2002

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EXAMINER

ESTRADA, MICHELLE

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 04/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/826,833

Applicant(s)

INOUE, YUSHI

Examiner

Michelle Estrada

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 4-9 rejected under 35 U.S.C. 102(b) as being anticipated by the Cronin et al. (6,143,640).

Cronin et al. disclose forming an opening (57) by etching process using a resist pattern (52) as a mask in a multi-layered film having a first polyimide organic insulating film (44), a first etching stop film (46) and a second polyimide organic insulating film (48) being layered in this order such that the opening penetrates from the second organic insulating film to the first organic insulating film, wherein a second etching stop film (50) is formed between the resist pattern and the second organic insulating film to protect the second organic insulating film from being etched during the formation of the opening; wherein the first organic insulating film has a dielectric constant of about 3 or lower (Col. 1, lines 13-15); wherein the second etching stop film is made from the same material as the first etching stop film; wherein the first etching stop film is a film that functions as an etching stopper to the first organic insulating film and has an insulating function; wherein the first etching stop film has a selectivity ratio with respect to the second organic insulating film of 5 or higher; wherein the first etching stop film is a silicon nitride film; wherein the second etching stop film is formed of such a material in

such a film thickness that the second organic insulating film is protected from being etched when an opening is formed through the second organic insulating film to the first organic insulating film (See fig. 14); wherein another etching stop film (42) which is functioned as a diffusion barrier for metallic elements or impurities is provided under the multi-layered film (Col. 6, lines 35+).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cronin et al. (6,143,640) and Zhou et al. (6,358,842).

Cronin et al. do not disclose that the first organic insulating film includes a single layer or a multi-layered film of polytetrafluoroethylene, fluorinated polyallyl ether or fluorinated polyimide.

Zhou et al. disclose forming an opening (See fig. 5) by etching process using a resist pattern (78) as a mask in a multi-layered film having a first organic insulating film (62) made of polytetrafluoroethylene, a first etching stop film (66) made of silicon nitride and a second organic insulating film (70) made of polytetrafluoroethylene being layered in this order such that the opening penetrates from the second organic insulating film to

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the first organic insulating film, wherein a second etching stop film (74) made of silicon nitride is formed between the resist pattern and the second organic insulating film to protect the second organic insulating film from being etched during the formation of the opening (Col. 4, lines 40-60).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Cronin et al. and Zhou et al. to enable formation of the first organic insulating film and also provides alternatives in the selection of the material for the layer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is 703-308-0729. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 (7724, 3431 and 3432) for regular communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Wael Fahmy
Supervisory Patent Examiner
Art Unit 2823

MEstrada
April 8, 2002


LONG PHAM
PRIMARY EXAMINER